REMARKS

I. Status of the Claims

Claims 11-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Promel, et al. (U.S. Pat. No. 6,225,421) ("Promel") in view Job, et al. (U.S. Pat. Appl. Pub. No. 20020128401) ("Job").

Applicants amended claims 11, 14-19, 21, and 22, and presented new claims 23 and 24 in this response.

Claims 11-24 are now pending.

II. Amendments to Claims

Applicants amended claim 11 to include the following changes: (a) the process is conducted "in the presence of a suspension medium;" (b) the process is further defined by including a limitation - "an after-reactor is avoided and a total yield of more than 98% is obtained;" (c) a clarification is added to show that the offgases are compressed in a compression stage "to produce compressed offgases;" (d) the gaseous fraction is further defined "to comprise an inert gas, hydrogen, and the monomer;" (e) the liquid fraction is further defined "to comprise the comonomer and the suspension medium;" (f) a further limitation is added to include that the gaseous fraction is recirculated into the first reactor and the liquid fraction is recirculated to at least one of the downstream reactors. The amendments to claim 11 are supported by the specification (from p. 3, l. 36 to p. 4, l. 5; p. 2, ll. 1-6; p. 2, ll. 8-16; p. 6, ll. 25-29; p. 7, ll. 1-9).

The amendment to claim 14 is supported by p. 2, ll. 18-21.

The new claim 23 is supported by p. 7, l. 2.

The new claim 24 is supported by p. 6, ll. 31-38.

III. Rejection under 35 U.S.C. 103(a) over Promel, et al. (U.S. Pat. No. 6,225,421) ("Promel") in view Job, et al. (U.S. Pat. Appl. Pub. No. 20020128401) ("Job")

A. Teachings of Promel

Promel discloses a process for the manufacture of a specific ethylene polymer composition comprising an ethylene homopolymer component and an ethylene-1-hexene copolymer component in a suspension. According to an alternative form of the process taught by Promel, in particular when the diluent is isobutane, the gases exiting from a first reduction in pressure and from the final reduction in pressure are mixed, fed to a distillation unit and separated into an ethylene-hydrogen mixture obtained from the top of the column, an isobutane-hexene mixture obtained at the bottom of the column, and an isobutane stream devoid of hexane that is obtained from the an intermediate plate of the column. The isobutane-hexene mixture is recycled in the second polymerization reactor, whereas the isobutane stream devoid of hexene is recycled in the first reactor. Promel teaches that the distillation unit may include one or two distillation columns (col. 5, ll. 26-40).

B. Teachings of Job

Job discloses a polymerization process in a fluidized-bed reactor (¶ 0073). The recycle stream of such a fluidized-bed reactor is fed to the reactor to fluidize the solid polymer particles. The recycle stream is also used to remove the heat of polymerization from the reactor by cooling the withdrawn gases before feeding them back to the reactor. By feeding a vaporizable liquid it is possible to increase the amount of heat that can be removed. Accordingly, fluidized-bed reactors are frequently operated in "condensing mode", where a part of the recycle stream is fed back as vaporizable liquid (¶ 0073). According to U.S. Pat. No. 4,543,399, which is incorporated by reference by Job, the recycle gas stream may be cooled to a temperature below the dew point of the recycle gas stream to produce a two-phase gas-liquid mixture which is fed to the fluidized bed reactor. The objective achieved by condensation is to remove heat in the fluidized bed reactor. Job neither teaches nor suggests separating the gas stream from the liquid stream and feeding the gas stream and the liquid stream to different reactors.

C. Applicants' invention

Applicants' amended claim 11 is a continuous, suspension process for preparing polyolefin polymers comprising having a bimodal or multimodal molar mass distribution from a monomer and a comonomer in the presence of a suspension medium in a first reactor and at least one downstream reactor which are connected in series. The different reactors are operated under different reaction conditions. The process avoids using an after-reactor but still achieves a total yield of more than 98%. The offgases from all the reactors are compressed, then cooled to produce a two-phase mixture including a gaseous fraction and a liquid fraction. The gaseous fraction comprises an inert gas, hydrogen, and the monomer. The liquid fraction comprises the comonomer and the suspension medium. The gaseous fraction is separated from the liquid fraction. The gaseous fraction is recirculated into the first reactor; and liquid fraction is recirculated into at least one of the downstream reactors.

D. Applicants' invention is not obvious over Promel in the view of Job under 35 U.S.C. 103(a)

Promel does not disclose separating components of the offgases by compressing and cooling the offgases. Promel uses a distillation column to separate the offgases into three streams: an ethylene-hydrogen mixture obtained from the top of the column, an isobutane-hexene mixture obtained at the bottom of the column, and an isobutane stream devoid of hexene that is obtained from the an intermediate plate of the column. Promel teaches recyclig the isobutane-hexene mixture to the second polymerization reactor and recycling the isobutane stream devoid of hexene to the first reactor. Promel does not suggest separating separate the offgases into two fractions. In addition, Promel does not suggest the composition of the gaseous fraction obtained according to the processes of Applicants invention, which comprise inert gas, hydrogen and monomer.

Job does not teach separating the offgases from a polymerization reactor at all. The objective achieved by condensation in Job's teachings is to remove heat in the fluidized bed reactor. In addition, Job does not teach feeding different

fractions into different reactors. Job only teaches cooling the offgases to produce a two-phase mixture and then feeding the entire mixture to the reactor. Applicants' invention is a process that comprises separating the offgases by compression and cooling to form a gaseous fraction and a liquid fraction with each fraction has specifically defined compositions. Job does not teaching separation at al. Therefore, Job teaches away from the Applicants' invention.

Neither Promel nor Job teaches the elements of amended claim 11. The process of the Applicants' invention uses a simple method of compression in combination with a cooling step to separate the offgases into two fractions: a gaseous fraction and a liquid fraction. The gaseous fraction comprises an inert gas, hydrogen, and the monomer. The liquid fraction comprises the comonomer and the suspension medium. The invention comprises separating the gaseous fraction from the liquid fraction, recirculating the gaseous phase into the first reactor, and recirculating the liquid fraction to at least one of the downstream reactors, thereby achieving grater than 98% yield without the use of an after-reactor. Neither Promel nor Job suggests specific elements of claim 11.

A claimed invention is unpatentable if the differences between it and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the pertinent art. 35 U.S.C. § 103(a) (2000); Graham v. John Deere Co., 383 U.S. 1, 13-14, (1966). "However, rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." In re Kahn, 441 F.3d 977, 988 (Fed. Cir. 2006).

In sum, Applicants' invention is not obvious over Promel in view of Job.

VI. Conclusion

In view of the above remarks, Applicants respectfully ask the Examiner to withdraw all objections and rejections and to pass the case to issue. Applicants invite the Examiner to telephone their attorney, Yuanzhang Han, at (610) 359-2492 if he believes that a discussion of the application might be helpful.

Respectfully submitted,

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